

JOURNAL OF CELLULAR PHYSIOLOGY

A WISTAR INSTITUTE PRESS JOURNAL PUBLISHED BY ALAN R. LISS, INC.

VITTORIO DEFENDI, *Editor-in-Chief*

New York University Medical Center • Department of Pathology
550 First Avenue • New York, New York 10016

EDITORS

RENATO BASERGA
Temple University

E.A. McCULLOCH
University of Toronto

DANIEL RIFKIN
New York University

PHILIP I. MARCUS
University of Connecticut

HAROLD L. MOSES
Vanderbilt University

P. SIEKEVITZ
The Rockefeller University

ASSOCIATE EDITORS

W. ADAMSON
University of Washington

MORRIS J. KARNOVSKY
Harvard University
Medical Center

IRA PASTAN
National Cancer Institute

**ENTER ALBRECHT-
LUEHLER**
Northwestern University

ARNOLD J. LEVINE
Princeton University

P.G.W. PLAGEMANN
University of Minnesota

UDIO BASILICO
New York University

GEORGE M. MARTIN
University of Washington

RUSSELL ROSS
University of Washington

WRENCE A. CHASIN
Columbia University

FREDERICK MAXFIELD
New York University

GIOVANNI ROVERA
The Wistar Institute

ANLEY COHEN
Vanderbilt University
School of Medicine

D. MAZIA
University of California
at Berkeley

ENRIQUE ROZENGURT
Imperial Cancer Research
Fund Laboratories

NNIS D. CUNNINGHAM
University of California at
Irvine

M.L. MENDELSON
Lawrence Livermore
Laboratory

E. RICHARD STANLEY
Albert Einstein College of
Medicine

DOLF JAENISCH
Whitehead Institute
for Biomedical Research

DONALD METCALF
Walter and Eliza Hall Institute

CLIFFORD STANNERS
McGill University

GARY S. STEIN
University of Massachusetts
Medical Center

CHARLES D. STILES
Dana-Farber Cancer Institute

INDER M. VERMA
The Salk Institute

MITCHEL VILLEREAL
University of Chicago

I. BERNARD WEINSTEIN
Columbia University
College of Physicians and
Surgeons

KENNETH M. YAMADA
National Cancer Institute

MARLENE CHAVIS, *Editorial Manager*
New York University Medical Center

COPYRIGHT © 1988 BY ALAN R. LISS, INC.
All Rights Reserved

VOLUME 135
APRIL, MAY, JUNE 1988

Contents

No. 1 APRIL 1988

JOSEPH W. FRANCIS, LAURENCE A. BOXER, AND HOWARD R. PETTY. Optical Microscopy of Antibody-Dependent Phagocytosis and Lysis of Erythrocytes by Living Normal and Chronic Granulomatous Disease Neutrophils: A Role of Superoxide Anions in Extra- and Intra-Cellular Lysis	1
JOANNE L. BLUM AND MAX S. WICHA. Role of the Cytoskeleton in Laminin Induced Mammary Gene Expression	13
VITO J. PALOMBELLA, JOHN MENDELSON, AND JAN VILČEK. Mitogenic Action of Tumor Necrosis Factor in Human Fibroblasts: Interaction With Epidermal Growth Factor and Platelet-Derived Growth Factor	23
K. KLINGLER, G.R. JOHNSON, N.A. NICOLA, G. ARMAN, N. KLUGE, AND W. OSTERTAG. Transformation of Single Myeloid Precursor Cells by the Malignant Histiocytosis Sarcoma Virus (MHSV): Generation of Growth-Factor-Independent Myeloid Colonies and Permanent Cell Lines	32
CORRADO GARBI, CHIARA ZURZOLO, MAURIZIO BIFULCO, AND LUCIO NITSCH. Synthesis of Extracellular Matrix Glycoproteins by a Differentiated Thyroid Epithelial Cell Line	39
HERMAN POLET AND JANOS MOLNAR. Demonstration That Some of the Nonhistone Proteins, Inducible to Translocate Into the Nucleus, Are Glycosylated	47
JUN MIYAUCHI, CHEN WANG, COLM A. KELLEHER, GORDON G. WONG, STEVEN C. CLARK, MARK D. MINDEN, AND ERNEST A. McCULLOCH. The Effects of Recombinant CSF-1 on the Blast Cells of Acute Myeloblastic Leukemia in Suspension Culture	55
JAMES B. MOBERLY AND DARRELL D. FANESTIL. A Monoclonal Antibody That Recognizes a Basolateral Membrane Protein in A6 Epithelial Cells	63
JAMES G. BENDER, DENNIS E. VAN EPPS, AND CARLTON C. STEWART. Characterization of Granulocytes and Mast Cells in Cultures of Mouse Bone Marrow Stimulated With Interleukin-3	71
R. PAUL SCHAUDIES AND H. LINTON WRAY. Inhibition of EGF Processing in Responsive and Nonresponsive Human Fibroblasts	79
MARIA ENGELKE, WERNER ZINGEL, AND ROSEMARIE BAUMANN. Membrane Potential of Primitive Red Cells From Chick Embryo Is a Proton Potential	87
BRUNO D. BEAUMELLE, HENRI J. VIAL, AND ALAIN BIENVENUE. Enhanced Transbilayer Mobility of Phospholipids in Malaria-Infected Monkey Erythrocytes: A Spin-Label Study	94
JEAN-CLAUDE CHAMBARD AND JACQUES POUYSSÉGUR. TGF- β Inhibits Growth Factor-Induced DNA Synthesis in Hamster Fibroblasts Without Affecting the Early Mitogenic Events	101
DAVID L. HINES. Proliferation and Differentiation of Abelson Virus-Infected Murine Myeloid Leukemia Cell Lines Does Not Involve an Autocrine Mechanism	108
M.G. MURALIDHAR AND L.F. JOHNSON. Delayed Processing/Export of Messenger RNA Under Conditions of Reduced Protein Synthesis	115
STEVEN J. SCHEINMAN. Effects of Confluence on Phosphate Transport Capacity in Cultured Renal Cell Lines	122

GRAZIELLA BELLONE, GIAN CARLO AVANZI, PATRIZIA LISTA, JILL HIBBIN, GIUSEPPE SAGLIO, GABRIELLA BENETTON, ROBERT FOA, AND LUIGI PEGORARO. Soluble Factor(s) Released by the PF-382 T-Cell Line Enhances the Stimulatory Effect of Monocytes on the BFU-E Growth	127
CHEN WANG, C.A. KELLEHER, G.Y.M. CHENG, JUN MIYAUCHI, GORDON G. WONG, STEVEN C. CLARK, MARK D. MINDEN, AND ERNEST A. MCCULLOCH. Expression of the CSF-1 Gene in the Blast Cells of Acute Myeloblastic Leukemia: Association With Reduced Growth Capacity	133
CHIN JOO GOH, ERWIN B. DUMBROFF, AND JAMES R. LEPOCK. Amino Acid Pools in CHL V79 Cells During Induction of Thermotolerance: Reduction in Free Intracellular Glutamine	139
DAVID I. RODENHISER, BURR G. ATKINSON, AND JACK H. JUNG. Synthesis and Secretion of Immunoglobulin G by Lymphocytes From Cultured Mouse Spleen Cells Is Not Affected by Heat Shock	145
KARL W. LANKS AND PING-WU LI. End Products of Glucose and Glutamine Metabolism by Cultured Cell Lines	151

No. 2 MAY 1988

MARK A. SCHENERMAN, KIRK J. LEISTER, DAVID K. TRACHTENBERG, AND EFRAIM RACKER. Induction of System A Amino Acid Transport Through Long-Term Treatment With Ouabain: Correlation With Increased (Na^+/K^+)-ATPase Activity	157
KIRK J. LEISTER, MARK A. SCHENERMAN, AND EFRAIM RACKER. Energetic Mechanism of System A Amino Acid Transport in Normal and Transformed Mouse Fibroblasts	163
SALLY JO STOEHR AND JAMES E. SMOLEN. Osmotic Forces Are Not Critical for Ca^{2+} -Induced Secretion From Permeabilized Human Neutrophils	169
MAYUMI SATO, KOICHI SHUDO, AND AKIYOSHI HIRAGUN. Functional Studies of Newly Synthesized Benzoic Acid Derivatives: Identification of Highly Potent Retinoid-Like Activity	179
MICHAEL PIEPKORN, PETER HOVINGH, AND ALFRED LINKER. Evidence for Independent Metabolism and Cell Surface Localization of Cellular Proteoglycans and Glycosaminoglycan Free Chains	189
ELIZABETH A. VALLEN, KEVIN A. ELDRIDGE, AND LLOYD A. CULP. Heparan Sulfate Proteoglycans in the Substratum Adhesion Sites of Human Neuroblastoma Cells: Modulation of Affinity Binding to Fibronectin	200
JEFF L. ELLSWORTH, CYNTHIA BROWN, AND ALLEN D. COOPER. Stimulation of LDL Receptor Activity in Hep-G2 Cells by a Serum Factor(s)	213
NANCY CHUNG-WELCH, DAVID SHEPRO, BERNADETTE DUNHAM, AND HERBERT B. HECHTMAN. Prostacyclin and Prostaglandin E_2 Secretions by Bovine Pulmonary Microvessel Endothelial Cells Are Altered by Changes in Culture Conditions	224
M. KONIECZKOWSKI AND M.J. DUNN. Sodium Transport in Rat Renal Papillary Collecting Tubule Cells in Culture	235
MICHAEL E. DOBSON, RICHARD O. STERN, AND AGNES B. KANE. Selective Purine Release From P388D ₁ Macrophages Injured by Silica	244
WILLIAM E. RUSSELL. Transforming Growth Factor Beta ($\text{TGF-}\beta$) Inhibits Hepatocyte DNA Synthesis Independently of EGF Binding and EGF Receptor Autophosphorylation	253
TOMOHISA HIROBE, EVELYN FLYNN, GEORGE SZABO, MICHAEL VRABEL, AND RAUL I. GARCIA. Growth Characteristics of Human Epidermal Melanocytes in Pure Culture With Special Reference to Genetic Differences	262
FERNANDO A. GONZALEZ, DAVID J. GROSS, LEON A. HEPPEL, AND WATT W. WEBB. Studies on the Increase in Cytosolic Free Calcium Induced by Epidermal Growth Factor, Serum, and Nucleotides in Individual A431 Cells	269

HUGUES J.-P. RYSER, RICHARD MANDEL, ASTEGHIK HACOBIAN, AND WEI-CHIANG SHEN. Methotrexate-Poly(Lysine) as a Selective Agent for Mutants of Chinese Hamster Ovary Cells Defective in Endocytosis	277
JORDI VILA AND MICHAEL J. WEBER. Mitogen-Stimulated Tyrosine Phosphorylation of a 42-kD Cellular Protein: Evidence for a Protein Kinase-C Requirement	285
DEBORAH H. DAMON, PATRICIA A. D'AMORE, AND JOHN A. WAGNER. Sulfated Glycosaminoglycans Modify Growth Factor-Induced Neurite Outgrowth in PC12 Cells	293
JAMES R. FLORINI AND DAINA Z. EWTON. Actions of Transforming Growth Factor- β on Muscle Cells	301
BARBARA STYRT AND MARK S. KLEMPNER. Lysosomotropic Amines Modulate Neutrophil Calcium Homeostasis	309
MARTHA BOSMA AND NEIL SIDELL. Retinoic Acid Inhibits Ca^{2+} Currents and Cell Proliferation in a B-Lymphocyte Cell Line	317
ADELE H. MARSHALL, DEBORAH ALPER, AND JOHN HISCOTT. Modulation of Nuclear Proto-Oncogene Expression and Cellular Growth in Myeloid Leukemic Cells by Human Interferon Alpha	324
JAMES M. MAY. Inhibition of Hexose Transport by Adenosine Derivatives in Human Erythrocytes	332
LEONARD M. NECKERS, HIROYUKI TSUDA, ERVIN WEISS, AND DOV H. PLUZNICK. Differential Expression of <i>C-myc</i> and the Transferrin Receptor in G_1 Synchronized M1 Myeloid Leukemia Cells	339
M. SORIANO, M.J. PUJOL, AND O. BACHS. Possible Cyclic AMP-Dependence of the Pre-replicative Surge of Cytosolic Calmodulin in Proliferatively Activated Rat Liver Cells	345
SHIN-ICHI TOMINAGA. Interferon Induces Cell Fusion and the Formation of Multinuclear Cells in a Culture of Ehrlich Ascites Tumor Cells	350

No. 3 JUNE 1988

ADA J. HUANG, MARTHA B. FURIE, SUSAN C. NICHOLSON, JORGE FISCHBARG, LARRY S. LIEBOVITCH, AND SAMUEL C. SILVERSTEIN. Effects of Human Neutrophil Chemotaxis Across Human Endothelial Cell Monolayers on the Permeability of These Monolayers to Ions and Macromolecules	355
JEFFREY L. STAECKER, CAROL A. SATTLER, AND HENRY C. PITOT. Sodium Butyrate Preserves Aspects of the Differentiated Phenotype of Normal Adult Rat Hepatocytes in Culture	367
SETH SADIS, EILEEN HICKEY, AND LEE A. WEBER. Effect of Heat Shock on RNA Metabolism in HeLa Cells	377
DOMENICK J. FALCONE AND MICHAEL J. FERENC. Acetyl-LDL Stimulates Macrophage-Dependent Plasminogen Activation and Degradation of Extracellular Matrix	387
YONG J. LEE AND WILLIAM C. DEWEY. Thermotolerance Induced by Heat, Sodium Arsenite, or Puromycin: Its Inhibition and Differences Between 43°C and 45°C	397
ERIK M. SCHAEFER, JOAN M. MOEHRING, AND THOMAS J. MOEHRING. Binding of Diphtheria Toxin to CHO-K1 and Vero Cells Is Dependent on Cell Density	407
PHILIP R. GORDON, THOMAS P. MAWHINNEY, AND BARBARA A. GILCHREST. Inositol Is a Required Nutrient for Keratinocyte Growth	416
SAMUEL B. HOROWITZ AND YING-TUNG LAU. A Function That Relates Protein Synthetic Rates to Potassium Activity In Vivo	425
YUN KIT HOM, THOMAS C. SUDHOF, JOSEPH J. LOZANO, ALFRED H. HAINDL, AND VICTOR ROCHA. Mammary Gland Ca^{2+} -Binding (-Dependent) Proteins: Identification as Calelectrins and Calpactin I/p36	435
RO DONG PARK, PETER C. SULLIVAN, AND BRIAN STORRIE. Hypertonic Sucrose Inhibition of Endocytic Transport Suggests Multiple Early Endocytic Compartments	443

JAIME F. MODIANO, ELLIE KELEPOURIS, JEFFREY A. KERN, AND PETER C. NOWELL. Requirement for Extracellular Calcium or Magnesium in Mitogen-Induced Activation of Human Peripheral Blood Lymphocytes	451
ANDREA E. ALLIO AND PAULA J. McKEOWN-LONGO. Extracellular Matrix Assembly of Cell-Derived and Plasma-Derived Fibronectins by Substrate-Attached Fibroblasts	459
PETER KNOX AND SHEILA CROOKS. Plasminogen Activation and Lysis of Blood Clots Induced by Cells In Vitro	467
MICHAEL R. RICHTER AND DANA T. GRAVES. DNA Synthesis in U-2 OS Human Osteosarcoma Cells Is Independent of PDGF Binding to Functional Cell Surface Receptors	474
IL SUK YANG, JAMES M. GOLDINGER, SUK KI HONG, AND MARY TAUB. Preparation of Basolateral Membranes That Transport p-Aminohippurate From Primary Cultures of Rabbit Kidney Proximal Tubule Cells	481
J.P.T.M. VAN LEEUWEN, M.P. BOS, AND M.P.M. HERRMANN-ERLEE. Involvement of cAMP and Calcium in the Induction of Ornithine Decarboxylase Activity in an Osteoblast Cell Line	488
L.M. NECKERS AND R.P. NORDAN. Regulation of Murine Plasmacytoma Transferrin Receptor Expression and G ₁ Traversal by Plasmacytoma Cell Growth Factor	495
FUMIO AMANO, MICHAEL M. GOTTESMAN, AND IRA PASTAN. Epidermal Growth Factor-Dependent Growth of Human KB Cells in a Defined Medium and Altered Growth Factor Requirements of KB Mutants Resistant to EGF- <i>Pseudomonas</i> Exotoxin Conjugates	502
WALTER IMAGAWA, GAUTAM K. BANDYOPADHYAY, DAIANA WALLACE, AND SATYABRATA NANDI. Growth Stimulation by PGE ₂ and EGF Activates Cyclic AMP-Dependent and -Independent Pathways in Primary Cultures of Mouse Mammary Epithelial Cells	509
GEORGE G. SKOUTERIS, MARGERY G. ORD, AND LLOYD A. STOCKEN. Regulation of the Proliferation of Primary Rat Hepatocytes by Eicosanoids	516
M. LEIGH ACKLAND, DAVID M. DANKS, AND HARRY J. MCARDLE. Studies on the Mechanism of Zinc Uptake by Human Fibroblasts	521
FUMIO AMANO, IRA PASTAN, AND MICHAEL M. GOTTESMAN. Genetic Characterization of Human KB Cell Lines Resistant to Epidermal Growth Factor: <i>Pseudomonas</i> Exotoxin Conjugates	527
JANE E. BARKER AND ELEANOR C. MCFARLAND. Hemopoietic Precursor Cell Defects in Nonanemic but Stem Cell-Deficient W ⁴⁴ /W ⁴⁴ Mice	533
JOHN R. RUDOLPH AND ERWIN REGOECZI. Interaction of Rat Asialotransferrin With Adult Rat Hepatocytes: Its Relevance for Iron Uptake and Protein Degradation	539
MAYUMI SATO AND AKIYOSHI HIRAGUN. Demonstration of 1 α ,25-Dihydroxyvitamin D ₃ Receptor-Like Molecule in ST 13 and 3T3 L1 Preadipocytes and its Inhibitory Effects on Preadipocyte Differentiation	545
KEITH A. HOUCK, JENNIFER L. CRUISE, AND GEORGE MICHALOPOULOS. Norepinephrine Modulates the Growth-Inhibitory Effect of Transforming Growth Factor-Beta in Primary Rat Hepatocyte Cultures	551
<i>Erratum</i>	
SCHEINMAN, STEVEN J. (1988) Effects of Confluence on Phosphate Transport Capacity in Cultured Renal Cell Lines. <i>J. Cell. Physiol.</i> , 135:122-126	556
Index to Volume 135	557

JOURNAL OF CELLULAR PHYSIOLOGY

A Wistar Institute Press Journal Published by Alan R. Liss, Inc.

NOTICE TO CONTRIBUTORS

Revised December 1987

Manuscripts and all editorial correspondence should be sent to Dr. Vittorio Defendi, New York University Medical Center, Department of Pathology, 550 First Avenue, New York, New York 10016, USA. **It is required that the letter of submission be signed by all co-authors. It is also suggested to submit the names of five (5) possible reviewers to decrease the processing.**

All manuscripts must be in English. Authors whose "first" language is not English should arrange for their manuscripts to be written in idiomatic English before submission. Either American or British style is acceptable. Submit the original and two clear copies of all elements (including tables and figures) typed on one side of good quality 22 x 28 cm (8½" x 11") paper with at least 25 mm (1") margins. Double space everything. Start a new page for each major division of the manuscript. Number all pages in sequence, beginning with the title page. Arrange the copy in the following order:

TITLE PAGE: This should contain:

- Complete article title
- Names and affiliations of all authors
- Institution(s) at which the work was performed with city, state, and Zip Code
- Acknowledgments of funding
- Name, address, telephone number, and cable address or Telex number for all correspondence
- A running head of not more than 48 characters
- Total number of text figures and tables

ABSTRACT: This should summarize the major findings and conclusions in the paper in not more than 250 words compressed into a single paragraph. The abstract will serve in lieu of a concluding summary and should be intelligible without reference to the rest of the paper.

TEXT: The text should follow the format: Abstract, Introduction, Materials and Methods, Results, Discussion, and Acknowledgments. Use subheadings and paragraph titles whenever possible. Define unusual abbreviations at first mention. Units of measure must be written in metric units.

LITERATURE CITED: References in the text to the literature should be made by author's name followed by year of publication:

. . . studies by Briggs (1975) reveal . . .

. . . studies by Briggs and Porter (1975) reveal . . .

If there are more than two authors, use the first author and et al. The final list must be alphabetized and include only references cited in the text. Each entry must include the names of all authors, complete title of the work cited, and inclusive page numbers. Abbreviations of journal titles should follow those used in *Index Medicus*. Examples:

Hall, D.J., O'Leary, J.J., Sand, T.T., and Rosenberg, A. (1981) Commitment and proliferation kinetics of human lymphocytes stimulated in vitro: Effects of α -MM addition and suboptimal dose on concanavalin A response. *J. Cell. Physiol.*, 108:25-34.

Zwilling, E. (1961) Limb morphogenesis. In:

Advances in Morphogenesis. M. Abercrombie and J. Brochet, eds. Academic Press, New York, Vol. 1, pp. 301-330.

LEGENDS: Each illustration must have a legend and be numbered consecutively with arabic numerals. Abbreviations pertaining to the labeling of figures should be listed once, alphabetically, and placed before the first figure containing these abbreviations.

TABLES: Each table must be typed on a separate page, be numbered in order of appearance with arabic numerals, have a title, and be keyed into the text.

ILLUSTRATIONS: Use illustrations sparingly; they should not duplicate information already made clear in the text. Illustrations may be mounted or unmounted. Good quality glossy black-and-white photographs 5" x 7" or 8" x 10" are preferred; a charge will be made for color. All graphics and lettering must meet professional standards and be legible after reduction in size. Illustrations must be numbered in order of appearance with arabic numerals and keyed into the text. Name of author, figure number, reduction requested, and an arrow indicating the orientation should be typed on a gummed label and affixed to the back of each illustration. Do not write directly on the back of the photo. If no reduction is desired, an illustration or group of illustrations should not exceed 6¾" (approximately 17.1 cm) wide by 8¾" (approximately 22.2 cm) long. Illustrations should be enclosed in an envelope.

All manuscripts submitted to JOURNAL OF CELLULAR PHYSIOLOGY must be submitted solely to this journal, may not have been published in any part or form in another publication of any type, professional or lay, and become the property of the publisher. Any material reproduced or adapted from any other published or unpublished source must be duly acknowledged. It is the author's responsibility to obtain permission to reproduce copyrighted material. Upon acceptance of a manuscript for publication, the author will be requested to sign an agreement transferring copyright to the publisher, who reserves copyright. No published material may be reproduced or published elsewhere without the written permission of the publisher and the author. The journal will not be responsible for the loss of manuscripts at any time. All statements in, or omissions from, published manuscripts are the responsibility of the author, who will assist the editor and publisher by reviewing proofs before publication. Reprint order forms will be sent with the proofs. It is important to order, initially, a sufficient quantity of reprints since the cost is substantially higher if ordered after publication.

To help defray the costs of printing Wistar Institute Press journals, the publisher will request from the author \$18 per page for text and tabular material and \$9 per page for illustrations, both the line drawings and photographs. Such payments are voluntary and are not a prerequisite to the publication of any article. However, because of the very high cost of color work, such work will be initiated only at the author's request and expense.